

What is claimed is:

1. A cardiac rhythm management device, comprising:
 - an atrial sensing channel for generating atrial electrogram signals;
 - 5 circuitry for detecting atrial senses when the atrial electrogram signal exceeds a specified threshold;
 - circuitry for measuring a time interval between successive atrial senses and for detecting a premature atrial contraction when the time interval meets a specified criterion;
 - 10 a ventricular pacing channel for delivering pacing pulses to a ventricle; and,
 - circuitry for causing a ventricular pace to be delivered only when a premature atrial contraction is detected, wherein the ventricular pace is delivered at a specified AV interval following the premature atrial contraction.
- 15 2. The device of claim 1 further comprising circuitry for pacing one or more heart chambers in accordance with an atrial tracking bradycardia pacing mode when no premature atrial contraction has been detected.
3. The device of claim 1 wherein the specified AV interval is a late-pace value.
- 20 4. The device of claim 1 wherein the specified AV interval is an early-pace value.
5. The device of claim 4 wherein the AV interval is constrained so that the ventricular pace is delivered after a specified minimum interval from the previous
- 25 ventricular sense or ventricular pace.

6. A cardiac rhythm management device, comprising:
an atrial sensing channel for generating atrial electrogram signals;
circuitry for detecting atrial senses when the atrial electrogram signal exceeds a specified threshold;
- 5 circuitry for measuring a time interval between successive atrial senses and for detecting a premature atrial contraction when the time interval meets a specified criterion;
a ventricular pacing channel for delivering pacing pulses to a ventricle;
circuitry for causing a ventricular pace to be delivered in accordance with an
- 10 atrial tracking bradycardia pacing mode such that a ventricular pace is delivered at a specified AV interval following an atrial sense;
circuitry for modifying the AV interval when a premature atrial contraction is detected.
- 15 7. The device of claim 6 wherein the AV interval is modified to a late-pace value when a premature atrial contraction is detected.
8. The device of claim 6 wherein the AV interval is modified to an early-pace value when a premature atrial contraction is detected.
- 20 9. The device of claim 8 wherein the AV interval is constrained so that the ventricular pace is delivered after a specified minimum interval from the previous sensed or paced ventricular beat.
- 25 10. The device of claim 6 wherein the bradycardia pacing mode includes AV sequential pacing.

11. A method for operating a cardiac rhythm management device, comprising:
 detecting an atrial sense when an atrial electrogram signal exceeds a specified
 threshold;
 measuring a time interval between successive atrial senses and detecting a
 premature atrial contraction when the time interval meets a specified criterion;
 delivering a pacing pulse to a ventricle when a premature atrial contraction is
 detected, wherein the ventricular pace is delivered at a specified AV interval following
 the premature atrial contraction.
12. The method of claim 11 further comprising pacing one or more heart chambers
 in accordance with a bradycardia pacing mode when no premature atrial contraction has
 been detected.
13. The method of claim 11 wherein the specified AV interval is a late-pace value.
14. The method of claim 11 wherein the specified AV interval is an early-pace
 value.
15. The method of claim 14 wherein the AV interval is constrained so that the
 ventricular pace is delivered after a specified minimum interval from the previous
 ventricular sense or ventricular pace.
16. A method for operating a cardiac rhythm management device, comprising:
 detecting an atrial sense when an atrial electrogram signal exceeds a specified
 threshold;
 measuring a time interval between successive atrial senses and detecting a
 premature atrial contraction when the time interval meets a specified criterion;
 delivering pacing pulses to a ventricle in accordance with an atrial tracking
 bradycardia pacing mode such that a ventricular pace is delivered at a specified AV
 interval following an atrial sense; and,

modifying the AV interval when a premature atrial contraction is detected.

17. The method of claim 16 wherein the AV interval is modified to a late-pace value when a premature atrial contraction is detected.

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18. The method of claim 16 wherein the AV interval is modified to an early-pace value when a premature atrial contraction is detected.

19. The method of claim 18 wherein the AV interval is constrained so that the
10 ventricular pace is delivered after a specified minimum interval from the previous sensed or paced ventricular beat.

20. The method of claim 16 wherein the bradycardia pacing mode includes AV sequential pacing.

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